

# 1. CEO message

## Benjamin Loh

President and Chief Executive Officer

2023 was another successful year for ASM. Sales increased by 13% at constant currencies, despite softening market conditions. This marked our seventh consecutive year of double-digit growth. We remain on track towards our strategic targets and continue to invest in innovation and expansion. I want to thank our people: their hard work and dedication contributed to ASM's robust performance in 2023.



## WFE market slightly lower, ASM outperformed in 2023

The semiconductor market contracted by around 10% in 2023, due to the weaker economic situation, higher interest rates, sluggish consumer spending, and inventory corrections in broader parts of the markets. Wafer fab equipment (WFE) spending showed a slight decrease in 2023, and the memory segment of the WFE market had a tough year, as expected. Leading-edge logic/foundry also markedly decreased. This was offset by strength in the mature node market segments: in power/analog/wafer, and particularly in China.

Leading-edge logic/foundry spending – a market in which ASM has strong positions – was still solid at the beginning of 2023, but demand weakened in the course of the year. This was due to continued weakness in end markets such as smartphones and PCs. In addition, new fab delays led to order push-outs in this segment. In total, our leading-edge logic/foundry sales meaningfully decreased in 2023. Importantly, customers continued developing the upcoming gate-all-around device technology, for which we received the first pilot line orders in the second half of 2023. In line with the tough market conditions in

2023, our memory sales dropped by around 40%. In memory, we benefited from healthy demand for AI-related DRAM memory. These high-performance DRAM devices require high-k ALD technology in which ASM has a leading position. The related volumes are, however, still limited, and could not offset the steep declines in the other parts of the memory market. In 3D-NAND, in 2022, we had the first contribution from gap-fill ALD wins, but in 2023, sales in this segment dropped markedly as customers cut down on capex. In total, memory dropped from 19% of equipment sales in 2022 to 11% in 2023.

The lower sales in leading-edge logic/foundry and memory was offset by increases in the power/analog/wafer segment, and in the more mature logic/foundry segment. In power/analog/wafer, our sales almost doubled in 2023, compared to a more modest level in 2022. Overall market demand increased strongly, driven by automotive and industrial, with some slowing towards the end of the year. Growth in the power/analog/wafer segment was also supported by the acquisition of LPE in 2022, which contributed more than €130 million in sales in 2023.

We also benefited from strong momentum with some of our new products. Our new SONORA vertical furnace platform, launched in 2022, made a strong contribution to our performance, including in the power/analog segment. In fact, apart from SiC epitaxy, vertical furnaces was the fastest growing product line in 2023. Intrepid ESA, our silicon Epi tool for 300mm power and wafer applications, again booked solid growth.

**“GAA is a major inflection for our company; we received the first pilot line orders in 2023.”**

### **Mature node demand in Chinese market**

The growth in mature logic/foundry and power/analog/wafer was in large part driven by the Chinese market, with our equipment sales in China increasing significantly. In November 2022, we communicated that the US export control measures announced in October 2022 were estimated to have a negative impact of 15%-25% on our sales in China. The new regulations issued by the Dutch and Japanese governments in 2023, and updated US regulation, are not expected to have a material additional impact compared to what was previously communicated. In response to increasing complexity of export control regulations, we invested in our trade compliance team, and further enhanced our processes. Compliance with all rules and regulations remains our key priority.

Demand in China grew strongly in the year in the mature nodes: in power/analog/wafer, and in the parts of mature logic/foundry that were not impacted by the export control measures. While the mature node segments are structurally a smaller part of our revenue, we had a strong contribution due to the substantial size of the investments in these segments in China in 2023. We also benefited from our investments in recent years to expand our presence and customer base in China. Furthermore, our sales in China increased with the consolidation of LPE, which has a strong share in this market.

### **Continued healthy financial results<sup>1</sup>**

Our total sales increased by 9% as reported. At constant currencies, sales increased 13%, outperforming the WFE market. Gross margin increased to 48.3% supported by mix, including a significant increase in sales from China with above-average profitability. Free cash flow increased by 17% in 2023 (on an adjusted basis, excluding cash spent on acquisitions in 2022), even with a further increase in capex. ASM's financial position continues to be strong.

### **Acquisitions of LPE and Reno delivering on expectations**

Our silicon carbide (SiC) epitaxy business – the acquisition of LPE in October 2022 – performed strongly in 2023, exceeding our initial expectations. The synergies in leveraging ASM's scale and capabilities have already been paying off. We can now, for example, offer (new) SiC customers enhanced support around the world. We increased development and manufacturing capacity, and we tripled our headcount to almost 200 in Italy. We also qualified the latest 200mm SiC Epi tools for manufacturing in our Singapore facility. We expanded the SiC Epi customer base in 2023 with a leading North American customer and a major European player. In the fourth quarter of 2023, two more customers selected our latest 200mm SiC Epi tool, with multiple tool orders expected in 2024. We believe our tools offer industry-leading performance and cost of ownership, particularly for 200mm SiC Epi processing. We expect to further expand our position as the SiC industry transitions from 150mm to 200mm wafer size in coming years. Despite the recent deceleration in the automotive market, long-term prospects remain strong for the SiC market, driven by a further increase in electric vehicle (EV) penetration. Supported by new customer wins, we expect strong revenue growth for this business in 2024.

The acquisition of Reno Sub-Systems in 2022, albeit smaller, is also delivering on expectations and contributing to the improved performance of our new generations of plasma tools. As far as our M&A strategy is concerned, we will continue to scan the market for other acquisition opportunities that could further strengthen our position in the deposition-equipment market and drive additional growth.

<sup>1</sup> Normalized figures are non-IFRS performance measures. See section 8.1 for a reconciliation of non-IFRS performance measures.

## Industry getting ready for gate-all-around

Despite the softening market conditions in the leading-edge logic/foundry market in 2023, our customers remained strongly committed to their technology roadmap. In 2023, key customers completed the largest part of the development for the 2nm gate-all-around (GAA) technology node. In the second half of the year, we booked the first meaningful orders for GAA pilot line activities that are starting in the first part of 2024. GAA is a major inflection for our company. We expect our served available market – SAM – to increase by US\$400 million, based on 100K wafer capacity, and compared to the previous technology node. The more complex device architecture of GAA will increase ALD requirements, such as more dipole and work-function layers. Silicon epitaxy (Si Epi) is also an enabling technology for GAA, to build the nanosheets, which form the heart of the transistor. We believe we have successfully defended our leading market share in ALD, and also increased our market share in Si Epi. We expect the ramp of 2nm/GAA in high-volume manufacturing (HVM) to drive a meaningful increase in our logic/foundry sales in 2025. Logic/foundry spending on GAA nodes is expected to account for more than 40% of total WFE by 2027.

**“ASM has never been in a stronger position than today.”**

## Investing in growth and innovation

We continued to invest in our R&D capacity and capability in 2023, increasing our R&D headcount by 11%. Net R&D grew by 32% as reported. The number of new R&D engagements and placement of evaluation tools further increased in 2023, including, for example, second-generation GAA 1.4nm applications. In view of the strong growth in our R&D activities in recent years, and expected further growth in coming years, we are running out of space and need to invest in expansion of our infrastructure. In May 2023, we held the groundbreaking ceremony for our new innovation and manufacturing center in Hwaseong (Dongtan), Korea, expanding our R&D in plasma ALD products, both for Korean and global customers. In December, we announced an investment of €300 million to build a new state-of-the-art research and development center in Scottsdale, Arizona. It will be twice as big as the current R&D facility, in Phoenix, Arizona, and will enhance our ALD and Epi product-development efforts.

In terms of manufacturing, we believe we have the capacity in place to deliver on our 2027 revenue targets. The completion of the second assembly floor of our facility in Singapore, and the additional manufacturing in our expanded facility in Korea, will increase our capacity by 3.7x compared to 2020. Supply-chain constraints, which were still significant in 2022, largely normalized in the course of 2023, except for specific areas such as in specialty materials.

## People are at the heart of ASM's success

In 2023, we increased our headcount by 7% to more than 4,500 people, and voluntary staff turnover dropped from 10% to 7%. Our talented people are at the heart of ASM's success, and we continued to invest in developing, training, and engaging with our people.

Diversity and inclusion is an important target for our company. We continue to aim for an increase in our female employees to 20% of our workforce in 2025, up from 17% in 2023. I'm particularly pleased with the increasing number of events organized by our Women Initiatives Network (WIN).

Our core values of 'We Care, We Innovate, We Deliver' are central to all we do at ASM, and we further embedded these values throughout the organization during the year. We also took steps to promote accountability, collaboration and empowerment (ACE) as best-practice behaviors, and further strengthen our culture.

**“In 2023, our net-zero targets were verified by SBTi, a first in the semiconductor industry.”**

## Sustainability highlights

In 2023, we took further steps to accelerate sustainability, one of the pillars of our strategy. A highlight this year was the verification of our Net Zero by 2035 targets by the SBTi, which is recognized as the leading body for validation of net-zero targets. One of the shorter-term goals in our path towards net-zero GHG emissions is to achieve 100% renewable electricity by 2024. We are well on track towards this goal, following an increase from 73% in 2022 to 88% in 2023. We are also committed to high sustainability

standards for the new facilities that we announced in Korea and Arizona (LEED Gold or higher).

After playing a principal role in forming and founding the Semiconductor Climate Consortium (SCC), in January, ASM was elected as the first Chair of the SCC. No one company can tackle climate change alone. We are all connected through our value chain, and dependent on one another to make collective progress. Initiatives like the SCC are critical to this progress. To this end, in 2023, we also co-sponsored Catalyze, a program focused on enabling renewable electricity within the semiconductor supply chain.

Our increased focus and underlying progress in sustainability has been reflected in improved ESG ratings, such as recent increase in ASM's scores with CDP.

## “The growth in AI means more ALD and Epi steps for ASM tools.”

### Longer-term prospects continue to be bright

Despite the slowdown in market conditions in 2023, the longer-term prospects are still strong for ASM. Third-party research firms forecast the semiconductor market to grow to more than \$1 trillion by the end of the decade. Digital transformation will continue to drive semiconductor usage, with semiconductors becoming essential in all aspects of life and society. This is reflected in several ‘Chips Acts’, as governments in different geographies and regions aim to build and strengthen their local semiconductor industries.

Artificial intelligence is expected to be one of the fastest growing end-market applications. In 2023, the impact on the semiconductor market started to become more significant, triggered by the huge interest in generative AI. Related chip volumes were still limited but expected to notably increase in coming years. This will lead to more investment in manufacturing capacity for advanced logic devices, such as GPUs and NPU, and high-performance DRAM. And that means more ALD and Epi steps for ASM tools.

## Growth through Innovation strategy reconfirmed

In September 2023, at our second Investor Day, we reconfirmed our strategic priorities. We aim to grow our ALD business and maintain our >55% market share. We expect ALD to remain one of the fastest growing segments of the WFE market with a CAGR of 10% to 14% in 2022-2027. In Si Epi, we are still aiming for further market-share increases to at least 30% by 2025. This applies particularly to the leading-edge part of the Si Epi market, which is expected to grow with a CAGR of 10% to 15% in the five-year period to 2027. In Vertical Furnaces and PECVD, we continue our selective growth strategy, and with SiC Epi we have added a highly synergistic and high-growth business.

For 2025, we target revenue in a range of €3-3.6 billion, up from the range of €2.8-3.4 billion we targeted at Investor Day 2021. For 2027, we are targeting further growth in revenue to a range of €4-5 billion, implying a CAGR of 11% to 16% in the five-year period 2022-2027.

### Outlook 2024

At the time of writing this message, the outlook for 2024 is still uncertain. While the broader semiconductor market is expected to recover in 2024, the softer WFE market conditions we saw in the second half of 2023 are expected to continue into the first part of 2024. For the first quarter of 2024, we expect revenue of €600-640 million, with a similar level in the second quarter. Looking at the expectations for WFE demand, memory and leading-edge logic/foundry demand is expected to gradually recover in the course of 2024. Demand in the Chinese market is expected to be still relatively high in the first part of the year, but likely to normalize in the rest of the year. For our SiC Epi business, we expect a continued strong performance in 2024.

We expect ASM to benefit from an expected rebound of the WFE market in 2025. Based on this, we remain confident ASM revenue will increase to the forecasted range for 2025 (€3.0-3.6 billion). The move of GAA 2nm technology into high-volume manufacturing in 2025 is expected to be a significant driver for ASM.

## On a personal note

As most of you know, this will be my last Annual Report message as CEO of ASM. As we announced in February 2024, I decided to step down both as CEO and from the Management Board as per the AGM on May 13, 2024. The past four years have been among the most exciting and intense of my career, spanning more than 30 years in the semiconductor industry. It has been an honor to lead the ASM team, and I'm extremely proud of what we have achieved. Together, we have strengthened our company's market positions, expanded our customer engagements, and made important progress in driving sustainability. I'm particularly pleased with the steps we have taken to build a strong culture that allows our talented people to excel and to drive the continued success of our company. ASM has never been in a stronger position than it is today. I am extremely pleased to hand over my responsibilities to Hichem M'Saad, who, I am sure, will successfully guide ASM into the next growth phase. It has been a privilege to work with our customers, suppliers, investors, and other stakeholders. Thank you for your trust in ASM, and for your continued support.

March 1, 2024

Benjamin Loh

President and Chief Executive Officer